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Instructions for use

ON THE NEUROPTERA OF THE RYUKYUS*

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Our knowledge on the fauna of the Neuroptera in the Ryukyus which geographically covers Okinawa and Sakishima (Miyako and Yaeyama) Archipelagoes and the Daito Islands is largely due to the works of Banks, Matsumura, Nakahara, Okamoto, Walker and others. However, there is room for further research. This paper is based chiefly on the material in the Hokkaido National Agricultural Experiment Station. The material has been forwarded especially from Mr. S. Higashihirachi of the Ryukyu Plant Protection Station. In addition, Dr. J. L. Gressitt and Prof. K. Yasumatsu have generously lent for this study the valuable specimens of the Ryukyus from the collections of the Bernice P. Bishop Museum and the Faculty of Agriculture, Kyushu University, respectively. Also Prof. C. Watanabe kindly permitted me to examine the specimens identified by the late Prof. S. Matsumura and the late Dr. H. Okamoto which are preserved at the Entomological Institute, Hokkaido University. The material thus available to me numbers more than 220 specimens. I should like to express my sincere appreciation to the above mentioned gentlemen for their kindness during my course of this study.

In my previous paper "A Revisional Synopsis of the Neuroptera in Japan" [Pacific Insects, IV (2): 325-412], I objectively followed the classification system accomplished by Brues, Melander and Carpenter (1954). In this paper, however, I treated the material by adopting some modern taxonomic opinions. I have enumerated in this paper 35 species of the Neuroptera belonging to seven families, in which one newly described and eight unrecorded species are included.

The following symbols indicate the museums or institutions, in which the specimens are preserved:

BM (Bernice P. Bishop Museum, Honolulu)

HAES (Hokkaido National Agricultural Experiment Station, Sapporo)

HU (Entomological Institute, Hokkaido University, Sapporo)

KU (Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka)

Family **Corydalidae**

1. ***Neochauiodes sinensis meridionalis*** van der Weele

Neochauiodes sinensis meridionalis van der Weele, Notes Leyd. Mus. XXX: 260 (1909); ditto, Coll. Zool. Selys Longch. V(1): 64, Pl. IV, fig. 33 (1910); Esben-Petersen, Ent. Mitt. II: 262 (1913).

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Neochauliodes sinensis Walker f. *meridionalis*: Matsumura, 6000 Illus. Ins. Jap.-Emp.: 1171, Fig. (1931).

Chauliodes formosanus Okamoto, Wien. Ent. Zeit. XXIX: 263 (1910).

Neochauliodes formosana: Banks, Phil. Jour. Sci. LXII: 275 (1937).

Specimen examined:—Ishigaki I. (1 ♀, July, 1925, S. Hirayama leg., HAES).

Distribution:—Ryukyus, Taiwan, Southern China.

This species is new to the fauna of the Ryukyus. Kimmins (1954) describes in detail the genital features of Chauliodini. According to my examination, the feature of female genitalia of this subspecies is near to that of *N. sinensis sinensis* (Walker) rather than that of *N. sinensis occidentalis* Weele shown by Kimmins.

Family **Sialidae**

2. *Sialis kumejimai* Okamoto

Sialis kumejimai Okamoto, Wien. Ent. Zeit. XXIX: 257 (1910); Banks, Phil. Jour. Sci. LXII: 275 (1937).

Specimen examined:—Okinawa I.: Nakijin (1 ♀, June 2, 1962, S. Higashihirachi leg., HAES).

Distribution:—Ryukyus, Taiwan.

Specimen at my disposal is to be identified as *S. kumejimai*. Banks (1937) recorded this species from Taiwan.

Family **Hemerobiidae**

3. *Psectra iniqua* (Hagen)

Hemerobius iniquus Hagen, Verh. Zool.-bot. Gesel. Wien IX: 208 (1859).

Annandalia curta Needham, Rec. Ind. Mus. III: 208, Pl. XXI, figs. 2-4 (1909); Banks, Phil. Jour. Sci. LXII: 278 (1937).

Annandalia iniqua: Banks, Psyche XXXIX: 104 (1932); Nakahara, Mushi XXXIV: 13, Figs. 17-21, Pl. IV, fig. 8 (1960); Nakahara and Kuwayama, Nat. & Life S. Asia I: 262 (1961).

Specimen examined:—Ishigaki I.: (1 ?*, November 10-20, 1952, G. K. Bohart leg., BM).

Distribution:—Ryukyus, Taiwan, Thailand, Ceylon, India.

This species is new to the Ryukyus. On the systematic position of this species, Tjeder (1961) recently discussed in detail and came to the conclusion that *Annandalia* was the same as *Psectra* and *A. curta* should be considered as a synonym of *H. iniquus*. I follow the authority of Tjeder.

4. *Sympherobius okinawensis*, sp. nov.

Head shining testaceous, sparingly with yellowish hairs; genae and postocular space dark brown. Mouth-parts dark brown, with concolorous palpi. Antennae with the two basal segments testaceous; flagellum fulvous.

Pronotum testaceous, with yellowish hairs at the sides. Meso- and metathorax dark brown, with an interrupted fulvous dorsal vitta. Legs uniformly fulvous; tarsi slightly darker.

* Abdomen is damaged. The same applies to those that follow.

Forewing pale fuscous, mottled with paler whitish-grey spaces which are centered on the pale interruptions of the longitudinal veins; somewhat darker towards the inner and outer margins. Longitudinal veins fuscous, variegated with short whitish streaks. Only two branches to Rs. Margins and veins clothed with yellowish hairs. Cross-veins intensively dark brown; those of the two gradate series narrowly bordered with fuscous shading; outer gradate series of four cross-veins usually arranged in two pairs between the branches of

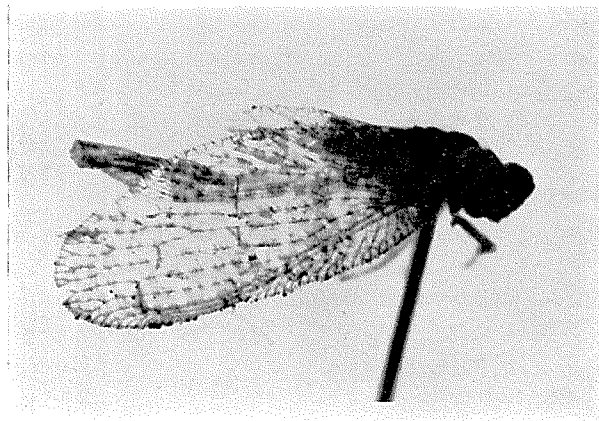


Fig. 1. *Sympherobius okinawensis*, sp. nov.
Holotype (♂), $\times 11$.

R and Rs; inner series of five cross-veins, of which the lower four are usually placed in a straight line.

Hindwing pale translucent grey, slightly tinged with brownish grey in the region of the pterostigma. Venation mainly fuscous, paler in the discal and basal areas; gradate cross-veins absent.

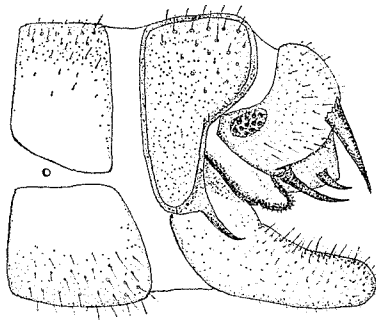


Fig. 2. *Sympherobius okinawensis*,
sp. nov. Apex of abdomen
of ♂ from lateral side.

Abdomen almost wholly fuscous, with long yellowish hairs sparingly. Male genitalia: Ninth tergite triangular, pointed downwards, produced at the ventro-lateral part into a dark brownish process. Anal plate, or ectoproct, broad and angulated, each more or less transversely divided into a basal and distal portions, with three prominent dark brownish distal processes; the longest one arising from the external dorsal part of the plate and the next longest from the external ventral part; the shortest arises from the internal distal portion; all the processes with simple sharply pointed

apices, slightly curved except the longest one; cercal callus with 11 trichobothria. Ninth sternite broad, but not very elongate; the apical part tapers into a short apex. Aedeagus large, blackish, in lateral view smoothly curved, bristled at the apex.

Size: Length of body 4 mm, of forewing 5 mm, of hindwing 4.5 mm.

Specimen examined:—Okinawa I.: Shuri (1♂, Holotype, April 11, 1960, S. Higashi-

hirachi leg., HAES).

Distribution :—Ryukyus.

This species somewhat resembles *S. pygmaeus* (Rambur) of Europe, but easily distinguished from it by the coloration and mottling phase of the forewing. The male genitalia are also distinctive.

5. ***Notiobiella subolivacea*** Nakahara

Notiobiella subolivacea Nakahara, Ann. Zool. Jap. IX: 20 (1915); Banks, Phil. Jour. Sci. LXII: 278 (1937); Nakahara, Mushi XXXIV: 8, Figs. 6-9 (1960); Kuwayama, Pac. Ins. IV: 359 (1962).

Distribution :—Ryukyus, Taiwan, Kyushu, Shikoku, Honshu.

Banks (1937) recorded the distribution of this species to the Iriomote Island, but I have not yet examined any specimens from the Ryukyus.

6. ***Micromus igorotus*** Banks

Micromus igorotus Banks, Bull. Mus. Comp. Zool. LXIV: 335 (1920).

Micromus (*Archaeomicromus*) *igorotus*: Banks, Phil. Jour. Sci. LXII: 138 (1937).

Eumicromus igorotus: Nakahara and Kuwayama, Nat. & Life S. Asia I: 263 (1961).

Pseudomicromus igorotus: Nakahara, Mushi XXXIV: 33, Figs. 65-67 (1960).

Eumicromus okinawanus Nakahara, Kontyû XXIV: 189, Pl. XXI, fig. 9 (1956).

Specimen examined :—Okinawa I.: (1♀, no date, S. Sakaguchi leg., HAES).

Distribution :—Ryukyus, Taiwan, Philippines, Thailand, Sumatra.

This seems to be widely distributed in the South-east Asia.

7. ***Micromus timidus*** Hagen

Micromus timidus Hagen, Ber. Verh. K. Preuss. Akad. Wiss. Berlin 1853: 481 (1853); Tjeder, S. Afr. Anim. Life VIII: 313, Figs. 458, 466, 484-513 (1961).

Micromus navigatorum Brauer, Verh. Zool.-bot. Gesel. Wien XVII: 508 (1867).

Micromus pusillus Gerstaecker, Mitt. naturw. Ver. Neuvorp. u. Rügen XVI: 171 (1894).

Micromus sauteri Esben-Petersen, Ent. Mitt. I: 198 (1912); ditto, Ent. Mitt. II: 228 (1913); Banks, Phil. Jour. Sci. LXII: 280 (1937).

Eumicromus diminutus Nakahara, Kontyû XXIV: 188, Fig. 6, Pl. XX, fig. 8 (1956).

Archaeomicromus timidus: Krüger, Stett. Ent. Zeit. LXXXIII: 171 (1922).

Archaeomicromus navigatorum: Esben-Petersen, Ins. Samoa VII: 93, Pl. II, fig. 3 (1928).

Eumicromus navigatorum: Kimmins, Ann. Mag. Nat. Hist. Ser. 12, VI: 245 (1953); Nakahara, Bull. Osaka Mus. Nat. Hist. 12: 39 (1960); ditto, Mushi XXXIV: 25, Figs. 38-40 (1960); Nakahara and Kuwayama, Nat. & Life S. Asia I: 262 (1961).

Nesomicromus navigatorum: Zimmerman, Ins. Hawaii VI: 63 (1957).

Eumicromus sauteri: Nakahara, Kontyû XXIV: 188, Fig. 5, Pl. XX, fig. 7 (1956); ditto, Mushi XXXIV: 24 (1960).

Specimens examined :—Okinawa I.: Shuri (1♀, June, 1958, N. L. H. Krauss leg., BM; 2♀♀, June 4-8, 1959, S. Higashihirachi leg., HAES; 1♂, May 14, 1960, S. Higashihirachi leg., HAES); Koza (1♂ 1♀, June 8, 1961, S. Higashihirachi leg., HAES); Mt. Goga (1♀, May 9, 1961, S. Higashihirachi leg., HAES); Chizuka (1♀, September 2, 1945, J. L. Gressitt leg., BM); Yona (1♂, November 13, 1960, K. Yasumatsu leg., KU); Osato-Yonahara (1♂, November 8, 1960, K. Yasumatsu leg., KU). Ishigaki I.: Okawa (1?, March 23, 1958, S. Higashihirachi leg., HAES); (2♂♂ 1♀, December 1-15, 1952, G. E. Bohart leg., BM). Minami-

Daito I.: (1♂, March 13, 1960, S. Higashihirachi leg., HAES).

Distribution:—Ryukyus, Kyushu, Honshu, Hachijo I., Taiwan, Philippines, Thailand, Malaya, Sumatra, Java, Ceylon, South India, Buru I., New Guinea, New Caledonia, New Hebrides, Fiji Is., Samoa Is., Australia, Seychelles, Madagascar, Africa, Hawaii (introduced).

This is common in the Ryukyus. Banks (1937) recorded from the Iriomote Island. According to the precise studies of Tjeder (1961), *Micromus navigatorum*, *M. pusillus*, *M. sauteri*, and *Eumicromus diminutus* are the same species as *M. timidus*. He states that the very extended distribution of this species is the widest of any intertropical species of this order.

Family Chrysopidae

8. *Ankylopteryx octopunctata* (Fabricius)

Hemerobius octopunctata Fabricius, Ent. Syst. II: 85 (1793).

Ankylopteryx octopunctata: van der Weele, Notes Leyd. Mus. XXXI: 57, Pl. IV, fig. 21 (1909); Banks, Phil. Jour. Sci. LXII: 280 (1937).

Ancylopteryx octopunctata: Okamoto, Rep. Hokkaido Agr. Exp. Sta. 9: 22, Pl. V, fig. 3 (1919); Matsumura, 6000 Illus. Ins. Jap.-Emp.: 1163, Fig. (1931).

Specimens examined:—Okinawa I.: (2♂♂ 1♀ 1?, no date, S. Sakaguchi leg., HAES, HU). Ishigaki I.: (1♂, July, 1925, S. Hirayama leg., HAES; 1♂, November 10–15, 1952, G. E. Bohart leg., BM).

Distribution:—Ryukyus, Taiwan, Philippines, Viet-num, Ceylon, India, Java, Sumatra, Borneo, Celebes.

Banks (1937) reported this species from the Iriomote Island.

9. *Ankylopteryx delicatula* Banks

Ankylopteryx delicatula Banks, Phil. Jour. Sci. LXII: 280 (1937).

Distribution:—Ryukyus.

Banks (1937) described this species from the Okinawa Island, but no specimen to be identified as this species is at my disposal.

10. *Ankylopteryx doleschalii* Brauer

Ankylopteryx doleschalii Brauer, Verh. Zool.-bot. Gesel. Wien XIV: 901 (1864); van der Weele, Notes Leyd. Mus. XXXI: 60 (1909).

Ankylopteryx doleschali: Banks, Phil. Jour. Sci. LXII: 280 (1937).

Distribution:—Ryukyus, Amboina, Celebes.

Banks (1937) recorded the distribution of this species from the Iriomote Island, but I have not examined this species.

11. *Ankylopteryx gracilis* Nakahara

Ankylopteryx gracilis Nakahara, Kontyû XXIII: 143, Pl. XXI, fig. 1 (1955).

Specimen examined:—Ishigaki I.: (1♀, December 10–15, 1952, G. E. Bohart leg., BM).

Distribution:—Ryukyus, Taiwan.

This is a new record for the Ryukyus.

12. *Sencera exquisita* Nakahara

Sencera exquisita Nakahara, Kontyû XXIII: 143, Pl. XXI, fig. 2 (1955); Nakahara and Kuwayama, Nat. & Life S. Asia I: 259 (1961).

Specimens examined:—Ishigaki I.: (1 ♂ 1 ♀, December 10–15, 1952, G. E. Bohart leg., BM).

Distribution:—Ryukyus, Taiwan, Thailand.

This species is also first known from the Ryukyus.

13. *Chrysopa cognatella* Okamoto

Chrysopa cognatella Okamoto, Jour. Coll. Agr., Tohoku Imp. Univ. VI: 70 (1914); ditto, Rep. Hokkaido Agr. Exp. Sta. 9: 46, Pl. I, fig. 10, Pl. VII, fig. 4 (1919); Banks, Phil. Jour. Sci. LXII: 282 (1937); Kuwayama, Pac. Ins. IV: 366 (1962).

Specimens examined:—Okinawa I.: Koza (1 ♂, May 18, 1961, S. Higashihirachi leg., HAES). Ishigaki I.: (1 ♀, January 1–5, 1953, G. E. Bohart leg., BM).

Distribution:—Ryukyus, Taiwan, China, Kyushu, Shikoku, Honshu, Hokkaido, Sachalin.

14. *Chrysopa decorata* Esben-Petersen

Chrysopa decorata Esben-Petersen, Ent. Mitt. II: 260, Fig. 10 (1913); Okamoto, Rep. Hokkaido Agr. Exp. Sta. 9: 47, Pl. I, fig. 11 (1919); Banks, Phil. Jour. Sci. LXII: 282 (1937); Kuwayama, Pac. Ins. IV: 368 (1962).

Distribution:—Ryukyus, Taiwan, Honshu.

Banks (1937) recorded this species from the Okinawa Island. I have seen no specimen of this species from there.

15. *Chrysopa nipponensis* Okamoto

Chrysopa nipponensis Okamoto, Jour. Coll. Agr., Tohoku Imp. Univ. VI: 65 (1914); ditto, Rep. Hokkaido Agr. Exp. Sta. 9: 50, Pl. 7, fig. 7 (1919); Kuwayama, Pac. Ins. IV: 366 (1962).

Specimens examined:—Miyako I.: (1 ♂ 1 ♀, October 27, 1952, G. E. Bohart leg., BM).

Distribution:—Ryukyus, Kyushu, Shikoku, Honshu, Hokkaido.

This species is new to the fauna of the Ryukyus.

16. *Chrysopa formosana* Matsumura

Chrysopa formosana Matsumura, Inj. & Benef. Ins. Sugarcane Formosa: 78, Pl. XXVIII, fig. 4 (1910); Okamoto, Rep. Hokkaido Agr. Exp. Sta. 9: 56, Pl. VI, fig. 11 (1919); Banks, Phil. Jour. Sci. LXII: 282 (1937); Kuwayama, Pac. Ins. IV: 364 (1962).

Distribution:—Ryukyus, Taiwan, Kyushu, Shikoku, Honshu, Hokkaido.

Banks (1937) reported the occurrence of this species in the Iriomote Island. I could not find any specimens to be identified as this species from the Ryukyus.

17. *Chrysopa astur* Banks

Chrysopa astur Banks, Phil. Jour. Sci. LXII: 283 (1937); Adams, Ins. Micronesia VIII (2): 31, Fig. 11 a-e (1959).

Specimen examined:—Okinawa I.: Osato-Yonahara (1 ♂, November 8, 1960, K. Yasumatsu leg., KU).

Distribution:—Ryukyus, Micronesia.

Type locality of this species is the Iriomote Island.

18. *Chrysopa boninensis* Okamoto

Chrysopa boninensis Okamoto, Jour. Coll. Agr., Tohoku Imp. Univ. VI: 62 (1914); ditto, Rep. Hokkaido Agr. Exp. Sta. 9: 61, Pl. I, fig. 16, Pl. IV, figs. 19–20, Pl. V, fig. 7 (1919); Adams, Ins. Micronesia VIII (2): 28, Fig. 7 d–g (1959); Kuwayama, Pac. Ins. IV: 365 (1962).

Chrysopa bonninensis (!): Sakaguchi, Prov. List Ins. Okinawa Is.: 33 (1927).

Specimens examined:—Okinawa I.: Shuri (1 ♂ 1 ♀, June 4–9, 1959, S. Higashihirachi leg., HAES); Koza (1 ♂, May 18, 1961, S. Higashihirachi leg., HAES); Yona (1 ♀, August 16–18, 1958, T. Hidaka leg., KU); (1 ♀, no date, S. Sakaguchi leg., HAES); (2 ♀♀, no date, S. Sakaguchi leg., HU). Ishigaki I.: (1 ♀, April, 1937, A. Tamanaha leg., KU).

Distribution:—Ryukyus, Taiwan, Bonin Is., Shikoku, Honshu.

19. *Chrysopa suzukii* Okamoto

Chrysopa suzukii Okamoto, Rep. Hokkaido Agr. Exp. Sta. 9: 60, Pl. VI, fig. 10 (1919); Kuwayama, Pac. Ins. IV: 365 (1962).

Specimen examined:—Miyako I.: (1 ♀, October 27, 1952, G. E. Bohart leg., BM).

Distribution:—Ryukyus, Shikoku, Honshu.

This is a new record to the Ryukyus.

20. *Chrysopa furcifera* Okamoto

Chrysopa furcifera Okamoto, Jour. Coll. Agr., Tohoku Imp. Univ. VI: 61 (1914); ditto, Rep. Hokkaido Agr. Exp. Sta. 9: 56, Pl. I, fig. 15, Pl. VII, fig. 5 (1919); Banks, Phil. Jour. Sci. LXII: 285 (1937); Adams, Ins. Micronesia VIII (2): 30, Fig. 10 (1959); Kuwayama, Pac. Ins. IV: 369 (1962).

Specimens examined:—Okinawa I.: Shuri (2 ♂♂ 1 ♀, May 14–July 15, 1960, S. Higashihirachi leg., HAES); Koza (3 ♂♂ 5 ♀♀, May 18–June 8, 1961, S. Higashihirachi leg., HAES); Ōgimi (1 ♂ 1 ♀, January 22, 1961, S. Higashihirachi leg., HAES); (2 ♂♂ 1 ♀, May, 1906, H. Kuroiwa leg.; 1 ♀, no date, S. Sakaguchi leg., HU). Irabu I.: (1 ♀, May 30, 1960, S. Higashihirachi leg., HAES). Ishigaki I.: (1 ♂, May 15, 1911, T. Iwasaki leg., HU). Iriomote I.: Ohara (2 ♀♀, August 24–25, 1958, T. Hidaka leg., KU). Kita-Daito I.: (2 ♂♂, April 8, 1936, M. Goto leg., KU; 1 ♀, February 20, 1960, S. Higashihirachi leg., HAES). Minami-Daito I.: (12 ♂♂ 17 ♀♀, February 23–April 16, 1960, S. Higashihirachi leg., HAES; 3 ♂♂ 21 ♀♀, February 27, 1961, S. Higashihirachi leg., HAES).

Distribution:—Ryukyus, Bonin Is., Kyushu, Shikoku, Honshu, Taiwan, Philippines.

This species is very common in the Ryukyus, especially abundant in the Daito Islands.

21. *Chrysopa alcestes* Banks

Chrysopa alcestes Banks, Proc. Ent. Soc. Wash. XIII: 102 (1911); Adams, Ins. Micronesia VIII (2): 32, Fig. 11 f–n (1959).

Specimens examined:—Okinawa I.: Naha (1 ♂, June 12, 1961, S. Higashihirachi leg., HAES; 1 ♂ 1 ♀, June, 1958, N. L. H. Krauss leg., BM); Shuri (5 ♂♂ 4 ♀♀, June 4–24, 1959, S. Higashihirachi leg., HAES; 12 ♂♂ 10 ♀♀, June 9–12 & August 25, 1960, S. Higashihirachi leg., HAES; 1 ♀, June, 1958, N. L. H. Krauss leg., BM); Koza (1 ♂, December 2, 1960, S. Higashihirachi leg., HAES; 3 ♂♂ 6 ♀♀, May 18–June 8, 1961, S. Higashihirachi leg., HAES); Yona (1 ♀, August 16–18, 1958, T. Hidaka leg., KU); Nago (2 ♂♂ 3 ♀♀, June 28–

July 8, 1961, S. Higashihirachi leg., HAES); Ôgimi (1♀, January 22, 1961, S. Higashihirachi leg., HAES); (1♂, no date, S. Sakaguchi leg., HAES). Miyako I.: (1♀, May 27, 1960, S. Higashihirachi leg., HAES; 1♀, October 27, 1952, G. E. Bohart leg., BM). Ishigaki I.: (2♀♀, November 25–December 10, 1952, G. E. Bohart leg., BM). Minami-Daito I.: (1♀, February 27, 1961, S. Higashihirachi leg., HAES).

Distribution:—Ryukyus, Bonin Is., India.

Though hitherto unrecorded from the Ryukyus, this species is very common throughout the Islands.

22. *Chrysopa scelestes* Banks

Chrysopa scelestes Banks, Proc. Ent. Soc. Wash. XIII: 103 (1911); Adams, Ins. Micronesia VIII (2): 28, Fig. 8 (1959).

Specimens examined:—Miyako I.: Former Navy Barrack (1♀, December 14, no record of collector, BM; 2♂♂, October 10, 1952, G. E. Bohart leg., BM).

Distribution:—Ryukyus, Micronesia, India.

This species is new to the Ryukyus. This species is allied to *C. basalis* Walker, but the male genitalia are quite distinctive.

23. *Chrysopa basalis* Walker

Chrysopa basalis Walker, List Neur. Ins. Coll. Brit. Mus. II: 239 (1853); Okamoto, Jour. Coll. Agr., Tohoku Imp. Univ. VI: 65 (1914); ditto, Rep. Hokkaido Agr. Exp. Sta. 9: 58 (1919); Esben-Petersen, Bishop Mus. Bul. 142: 13, Figs. 1–2; l. c.: 137, Fig. 1 b (1935); Banks, Phil. Jour. Sci. LXII: 282 (1937); Adams, Ins. Micronesia VIII (2): 24, Figs. 5–6 (1959); Nakahara and Kuwayama, Nat. & Life S. Asia I: 260 (1961).

Chrysopa formosana Esben-Petersen (nec Matsumura), Ent. Mitt. II: 257, Fig. 7 (1913).

Chrysopa peterseni Okamoto (nec Navás), Rep. Hokkaido Agr. Exp. Sta. 9: 63 (1919).

Anisochrysa paradoxa Nakahara, Kontyû XXIII: 146, Pl. XXIII, fig. 5 (1955).

Specimen examined:—Okinawa I.: Shuri (1♀, June 6, 1959, S. Higashihirachi leg., HAES).

Distribution:—Ryukyus, Taiwan, Philippines, Micronesia, Polynesia, Australia, Hawaii.

This widely distributed species seems to be uncommon in the Ryukyus.

24. *Chrysopa remota* Walker

Chrysopa remota Walker, List Neur. Ins. Coll. Brit. Mus. II: 238 (1853); Okamoto, Jour. Coll. Agr., Tohoku Imp. Univ. VI: 65 (1914); ditto, Rep. Hokkaido Agr. Exp. Sta. 9: 57, Pl. VI, fig. 7 (1919); Esben-Petersen, Ins. Samoa VII (3): 101, Pl. III, fig. 10 (1928); Banks, Phil. Jour. Sci. LXII: 285 (1937).

Distribution:—Ryukyus, Taiwan, Samoa, New Hebrides.

Originally described from the Ryukyus and Navigator's Island (Samoa). But I have not seen any specimen of this species from the Ryukyus. Banks (1937) had a doubt on occurrence in the Ryukyus.

25. *Nothochrysa japonica* MacLachlan

Nothochrysa japonica MacLachlan, Trans. Ent. Soc. Lond. 1875: 182 (1875); Okamoto, Rep. Hokkaido Agr. Exp. Sta. 9: 26, Fig. 3, Pl. II, fig. 8, Pl. V, fig. 9 (1919); Banks, Phil. Jour. Sci. LXII: 280 (1937); Kuwayama, Pac. Ins. IV: 374 (1962).

Nothochrysa modesta Nakahara, Kontyû XXIII: 146, Pl. XXIII, fig. 6 (1955).

Specimens examined:—Okinawa I.: Koza (1 ♂, May 18, 1961, S. Higashihirachi leg., HAES). Minami-Daito I.: (1 ♂ 2 ♀♀, April 14–15, 1960, S. Higashihirachi leg., HAES).

Distribution:—Ryukyus, Kyushu, Shikoku, Honshu, Taiwan, China.

Family **Mantispidae***

26. *Mantispa transversa* (Stitz)

Mantispilla transversa Stitz, Mitt. Zool. Mus. Berlin VII: 5, Fig. 5 (1913).

Mantispa transversa: Kuwayama, Jour. Coll. Agr., Hokkaido Imp. Univ. XV: 256 (1925); Banks, Phil. Jour. Sci. LXII: 289 (1937).

Specimen examined:—Ishigaki I.: (1 ♂, October, 1951, R. H. Bohart leg., BM).

Distribution:—Ryukyus, Taiwan.

Banks (1937) recorded the distribution of this species to the Iriomote Island.

Family **Myrmeleontidae**

27. *Glenuroides okinawensis* Okamoto

Glenuroides okinawensis Okamoto, Wien. Ent. Zeit. XXIX: 296 (1910); Nakahara, Ent. News XXIV: 301 (1913); Okamoto, Zool. Mag. XXVI: 249 (1914); Sakaguchi, Prov. List Ins. Okinawa Is.: 33 (1927); Matsumura, 6000 Illus. Ins. Jap.-Emp.: 1157, Fig. (1931); Banks, Phil. Jour. Sci. LXII: 287 (1937).

Specimens examined:—Okinawa I.: (1 ♂, no date, S. Sakaguchi leg., HAES; 1 ♂, no date, H. Kuroiwa leg., HU; 1 ♂, 2 ♀♀, no date, S. Sakaguchi leg., HU). Ishigaki I.: Yonehara-Hoshino (1 ♂, August 27, 1958, T. Hidaka leg., KU).

Distribution:—Ryukyus.

This pretty antlion is indigenous to the Ryukyus.

28. *Pseudofornicaleo jacobsoni* van der Weele

Pseudofornicaleo jacobsoni van der Weele, Notes Leyd. Mus. XXXI: 25, Fig. 11, Pl. II, fig. 8 (1909); Adams, Ins. Micronesia VIII (2): 15 (1959); Kuwayama, Pac. Ins. IV: 384 (1962).

Creagris matsuoake Okamoto, Wien. Ent. Zeit. XXIX: 282, Fig. 3 (1910); ditto. Zool. Mag. XXVI: 249 (1914); ditto, Icon. Ins. Jap. Ed. Prim.: 1529, Fig. 3019 (1932).

Gama matsuoake: Banks, Phil. Jour. Sci. LXII: 287 (1937).

Specimen examined:—Ishigaki I.: (1 ♀, May 21, 1934, K. Baba leg., HAES).

Distribution:—Ryukyus, Kyushu, Shikoku, Honshu, Taiwan, China, Micronesia, Malaya, Java, Ceylon.

29. *Distoleon parvulus* (Okamoto)

Myrmecaelurus parvulus Okamoto, Wien. Ent. Zeit. XXIX: 293, Fig. 7 (1910); Nakahara, Ent. News XXIV: 301 (1913); Okamoto, Zool. Mag. XXVI: 250 (1914).

Distoleon parvulus: Banks, Phil. Jour. Sci. LXII: 287 (1937); Kuwayama, Pac. Ins. IV: 386 (1962).

* Besides *M. transversa*, *Climaciella habutsuella* Okamoto, which is synonymous with *C. quadrituberculata* (Westwood), was reported from the Ryukyus by some research workers. But the type locality of *C. habutsuella* is the Yakushima Island, adjacent to the southern Kyushu. I have not yet examined this species from the Ryukyus.

Specimens examined:—Okinawa I.: (1♂, June, 1945, G. E. Bohart leg., BM; 1♀, July, 1905, H. Kuroiwa leg., HU; 2??, S. Sakaguchi leg., HU).

Distribution:—Ryukyus, Kyushu, Bonin Is.

30. ***Distoleon bistrigatus*** (Rambur)

Myrmeleon bistrigatus Rambur, Hist. Nat. Ins. Nevropt.: 391 (1842).

Distoleon bistrigatus: Banks, Ann. Ent. Soc. Am. III: 43 (1910); Adams, Ins. Micronesia VIII (2): 15 (1959).

Eidoleon bistrigatus: Esben-Petersen, Arkiv Zool. XI (26): 15 (1918).

Formicaleo acuminatus Okamoto, Wien. Ent. Zeit. XXIX: 290, Fig. 6 (1910); Nakahara, Ent. News XXIV: 301 (1913).

Formicaleo acuminatus: Okamoto, Zool. Mag. XXVI: 250 (1914).

Formicaleo yayeyamensis Sakaguchi (nom. nud.), Prov. List Ins. Okinawa Is.: 33 (1927); Matsumura, 6000 Illus. Ins. Jap.-Emp.: 1156, Fig. (1931). **New Synonymy.**

Specimens examined:—Okinawa I.: (1♀, no date, S. Sakaguchi leg., HAES; 1♂, no date, S. Sakaguchi leg., HU). Yaeyama Is.: (1♀, August, 1903, H. Kuroiwa leg., HU; 1♀, 1910, S. Matsumura leg., HU). Irabu I.: (1♀, May 30, 1960, S. Higashihirachi leg., HAES). Minami-Daito I.: (1♂ 1♀, March 29–30, 1960, S. Higashihirachi leg., HAES).

Distribution:—Ryukyus, Bonin Is., Micronesia, India, Australia.

31. ***Distoleon contubernalis*** (MacLachlan)

Formicaleo contubernalis MacLachlan, Trans. Ent. Soc. Lond. 1875: 175 (1875); Okamoto, Wien. Ent. Zeit. XXIX: 289 (1910).

Formicaleo contubernalis: Okamoto, Zool. Mag. XXVI: 250 (1914).

Distoleon contubernalis: Okamoto, Ins. Mats. I: 19 (1926); Kuwayama, Pac. Ins. IV: 386 (1962).

Specimens examined:—Okinawa I.: (1♀ 1♂, no date, S. Sakaguchi leg., HU).

Distribution:—Ryukyus, Kyushu, Honshu, Korea.

32. ***Hagenomyia micans*** (MacLachlan)

Myrmeleon micans MacLachlan, Trans. Ent. Soc. Lond. 1875: 176 (1875); Okamoto, Wien. Ent. Zeit. XXIX: 299 (1910); Nakahara, Ent. News XXIV: 301 (1913).

Hagenomyia micans: Okamoto, Zool. Mag. XXVI: 250 (1914); Matsumura, 6000 Illus. Ins. Jap.-Emp.: 1158, Fig. (1931); Kuwayama, Pac. Ins. IV: 387 (1962).

Specimen examined:—Okinawa I.: (1♀, August, 1904, T. Miyagi leg., HU).

Distribution:—Ryukyus, Kyushu, Shikoku, Honshu, Hokkaido, Korea, Taiwan, China.

33. ***Myrmeleon formicarius*** Linnaeus

Myrmeleon formicarius Linnaeus, Syst. Nat. ed. XII: 914 (1767); Esben-Petersen, Ent. Meddel. XII: 124 (1918); Kuwayama, Kontyû XXVII: 67, Pl. V, figs. A 1–4 (1959); ditto, Pac. Ins. IV: 388 (1962).

Myrmeleon formicarius: Okamoto (in part), Wien. Ent. Zeit. XXIX: 298 (1910); Nakahara, Ent. News XXIV: 301 (1913); Okamoto, Zool. Mag. XXVI: 250 (1914).

Distribution:—Ryukyus ?, Korea ?, Kyushu, Shikoku, Honshu, Hokkaido, Sachalin, Siberia, Caucasus, Europe.

Although this species has been recorded from the Ryukyus by Okamoto, Nakahara and others, I could not verify this as I could not encounter any specimen to be identified with *M. formicarius* from there.

34. *Grocus acer* (Walker), comb. nov.

Myrmeleon acer Walker, List Neur. Ins. Coll. Brit. Mus. II: 348 (1853); van der Weele, Notes Leyd. Mus. XXXI: 41, Pl. III, Fig. 14 (1909); Esben-Petersen, Ent. Mitt. XV: 22 (1926).

Myrmeleon acer: Adams (in part), Ins. Micronesia VIII (2): 18 (1959).

Specimen examined:—Okinawa I.: (1♀, no date, S. Sakaguchi leg., HAES).

Distribution:—Ryukyus, Micronesia, Indonesia, Australia.

So far as I am aware, this is the first record of this species from the Ryukyus.

Family **Ascalaphidae**35. *Suphalomitus okinavensis* (Okamoto), comb. nov.

Ogcogaster okinavensis Okamoto, Zool. Mag. XXI: 505, Pl. XI, fig. 1 (1909).

Ogcogaster okinawensis (!): Okamoto, Wien. Ent. Zeit. XXIX: 62 (1910); Sakaguchi, Prov. List Ins. Okinawa Is.: 34 (1927); Matsumura, 6000 Illus. Ins. Jap.-Emp.: 1160, Fig. (1931).

Specimens examined:—Okinawa I.: Shuri (1♀, September 14, 1959, S. Higashihirachi leg., HAES); Nago (1♀, June 21, 1961, S. Higashihirachi leg., HAES); Nakasone (1♂ 1♀, May 27, 1957, K. Inami leg., HAES); (1♀, no date, S. Sakaguchi leg., HAES; 4♂♂ 4♀♀, no date, S. Sakaguchi leg., HU; 1♀, July, 1905, T. Miyagi leg., HU). Ishigaki I.: Takada (1♂, June 20, 1955, S. Higashihirachi leg., HAES); (1♀, July, 1925, S. Hirayama leg., HAES; 2♂♂ 1♀, June, 1922, S. Hirayama leg., HU); (1♀, June 20, 1958, K. Takara leg., KU). Iriomote I.: (1♂, September 26, 1958, S. Higashihirachi leg., KU).

Distribution:—Ryukyus.

Although this species is indigenous to the Ryukyus, it is rather common throughout the Islands.

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